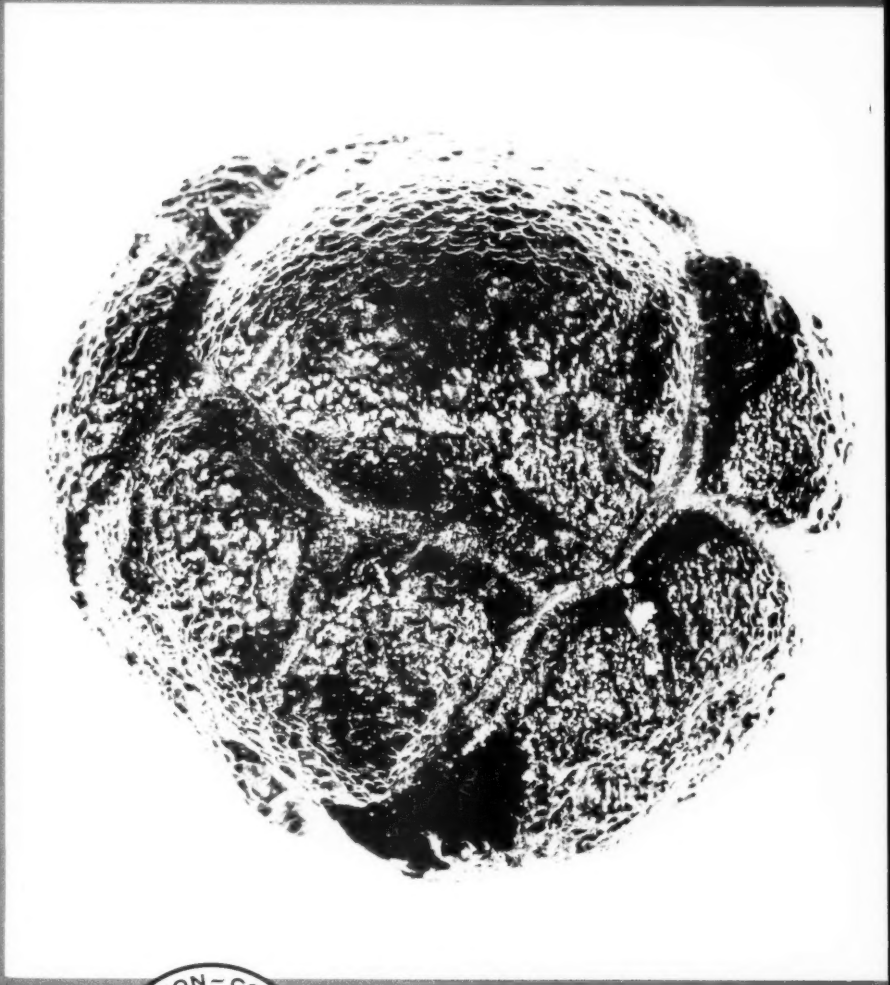
GeoTimes

Successor to the Geological Newsletter



June 1957

Volume 1, No. 12

Published Monthly by the
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Calendar

Cooperation of Society Secretaries in supplying meeting notices for GEOTIMES calendar is requested.

June 3-7, 1957—27th NORELCO X-RAY DIFFRACTION SCHOOL, Madison Room, Morrison Hotel, Chicago. Write: Philips Electronics, Inc., Instr. Div., 750 S. Fulton Ave., Mt. Vernon, N. Y.

June 14-15, 1957—SSA, EASTERN SECTION Ann. Mtg., John Carroll University, Cleveland, Ohio.

July 1, 1957-December 31, 1958—THE INTERNATIONAL GEOPHYSICAL YEAR.

July 10-19, 1957—INTERNATIONAL UNION OF CRYSTALLOGRAPHY, 4th General Assembly & International Congress. McGill Univ., Montreal, Quebec.

July 16-22, 1957—SYMPOSIUM ON GEOCHEMISTRY, IUPAC Comm. of Geochem. & Sect. of Inorg. Chem. Paris, France.

August, 1957—INTERNAT. ASSOC. OF SEISMOLOGY & Physics of the Earth's Interior, Toronto, Ont.

August, 1957—INTERNATIONAL ASSOC. OF PHYSICAL OCEANOGRAPHY, General Assembly, Canada.

Aug. 19-23, 1957—SIXTH NATIONAL CLAY CONFERENCE, Univ. of Calif., Berkeley. Reg. fee $6.00: Univ. Extension, Univ. of Calif., Berkeley 4, Calif.

Sept. 2-16, 1957 — FIFTH CONGRESS OF INQUA, Madrid, Spain. For information write: L. Sole Sabaris, Instituto Geologico, Universidad Barcelona, Spain.

CARBON-14 DATING, 3rd Internat'l. Conf., in conjunction with INQUA, Madrid. Write: M. Rubin, U. S. Geological Survey, Washington 25, D. C.

Sept. 3-14, 1957 — INTERNAT. UNION OF GEODESY & GEOPHYSICS, 11th Gen. Assembly, Toronto, Canada. Add.: Dr. J. A. Jacobs, 49 St. George St., Toronto, Ont., Canada.

Sept. 5-7, 1957—NEW MEXICO GEOL. SOC., Eighth Ann. Field Conf. in the Durango-Silverton-Ouray area of S. W. Colo.

Sept. 9-10, 1957—AMER. CERAMIC SOC., Basic Science Div., State U. of N.Y. Coll. of Ceramics, Alfred Univ., Alfred, N. Y.

Sept. 10-13, 1957—ALASKAN SCIENCE CONFERENCE, 8th, Anchorage, Alaska. Write: C. J. Beers, U.S.C. & G.S., College, Alaska.

Sept. 13-14, 1957—ARDMORE GEOLOGICAL SOCIETY Field Conference; Criner Hills-Lake Murray Area of South-central Oklahoma. Write: R. B. Harrington, P.O. Box 1099, Ardmore, Okla.

Sept. 20-Oct. 2, 1957—PAN INDIAN OCEAN SCIENCE Congress, Tananarive, Madagascar.

Oct. 4-6, 1957—NINTH INDIANA GEOLOGIC FIELD CONFERENCE on rocks associated with the Mississippian-Pennsylvanian unconformity in SW Indiana. Sponsored by Ind. G.S. & the Dept. of Geol. of Ind. Univ. Spring Mill State Park.

Oct. 15-18, 1957—SOUTHEASTERN STATES MINING CONF., sponsored by Fla. Sect. AIME & the Soc. of Min. Engrs. of AIME, Hillsboro Hotel, Tampa, Fla.

Oct. 17-19, 1957—FOUR CORNERS GEOLOGICAL SOC. FIELD CONFERENCE, 2nd Gallup New Mex. For information write P. O. Box 615, Albuquerque, N. M.

Oct. 30-Nov. 1, 1957—ROCKY MTS. MINERALS CONF. AIME, Denver, Colo.

Advance Sales Top 3,500

GEOLOGY GLOSSARY AVAILABLE

Prepublication sales of the GLOSSARY OF GEOLOGY AND RELATED SCIENCES topped 3,500 to exceed the most optimistic predictions of AGI officials. Indications are that the stock of 5000 copies of the first printing of the Glossary will be exhausted within a few weeks. Approximately 40 per cent of the prepublication sales of the Glossary were made to geology-geophysics students in colleges and universities of the U. S. and Canada who benefited from a special educational price offered by the Institute.

Deliveries of the Glossary from the bindery began late in May, and first preference in processing has been given to student orders.

The GLOSSARY OF GEOLOGY AND RELATED SCIENCES contain nearly 14,000 terms—far more than any other available source of earth science terms. It is the work of almost one hundred specialists from 25 areas of the earth sciences, under the dedicated leadership of Dr. J. V. Howell, Tulsa Consulting Geologist.

Geologists and geophysicists who are interested in obtaining a copy of the Glossary without delay, which may result when the first 5000 copies are exhausted, are urged to order a copy at once.

Order from AMERICAN GEOLOGICAL INSTITUTE, 2101 Constitution Ave., N.W., Washington 25, D. C. *The price is $6. Your order must be accompanied by payment—no billing.*

Nov. 3, 1957—SVP ANN. MTG., Acad. Nat. Sci., Philadelphia, Pa.

Nov. 4-5, 1957—SVP Technical Sessions, with GSA, etc., Atlantic City, N. J.

Nov. 4-6, 1957—GSA, ANN. MTG., Atlantic City, N. J. Geochem., MSA & PS ann. mtgs. in conjunction.

Nov. 7-8, 1957—SEGp, PACIFIC COAST SECTION, Ambassador Hotel, Los Angeles, Calif. Write: J. A. Hugus, Western Gulf Oil Co., 900 Wilshire Blvd., Los Angeles.

Nov. 11-14, 1957—SEGp, 27th ANNUAL MEETING, Statler-Hilton Hotel, Dallas, Texas.

Nov. 18-Dec. 9, 1957—9TH PACIFIC SCIENCE CONGRESS, Pacif. Sci. Assoc., Chulalongkorn University, Bangkok, Thailand.

Dec. 26-31, 1957—AAAS, Nat. Mtg., Indianapolis, Ind.

1960—XXIst INTERNATIONAL GEOLOGICAL CONGRESS, Copenhagen, Denmark. Field excursions to Scandinavian countries.

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This Month in GEOTIMES

Successor to the Geological Newsletter

Published by THE AMERICAN GEOLOGICAL INSTITUTE

Robert C. Stephenson, EDITOR

Kathryn Lohman CIRCULATION MANAGER

Vol. I, No. 12 June, 1957

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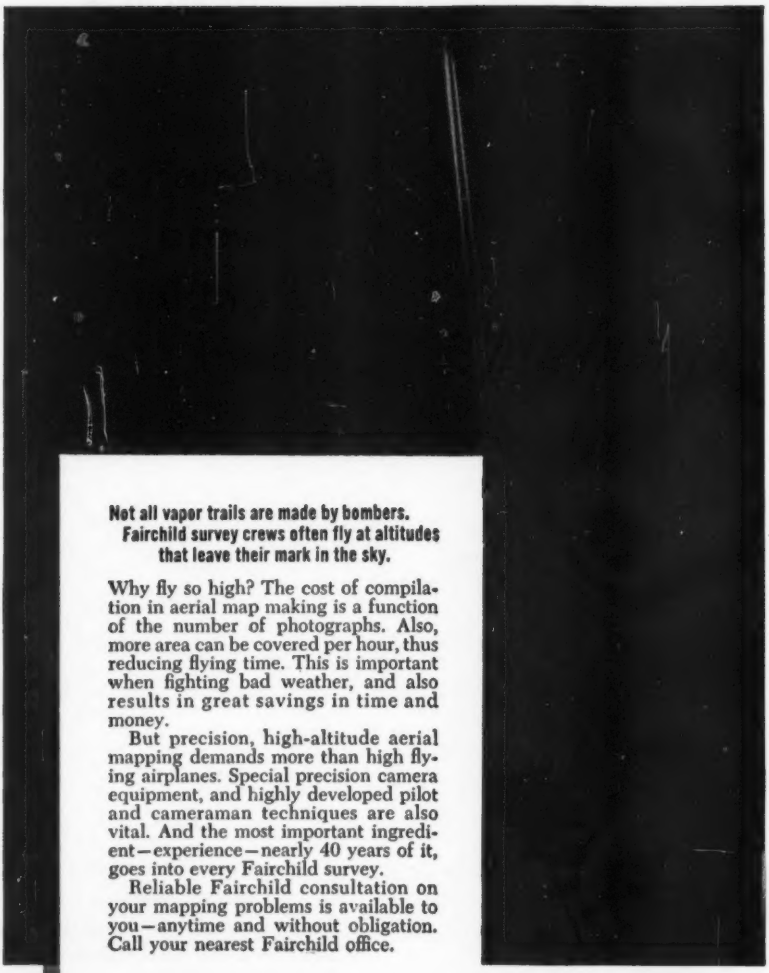

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Where is Geology?

The geological profession has distinguished itself by its lethargy in reacting to the NSF-sponsored summer institute program for the coming summer.

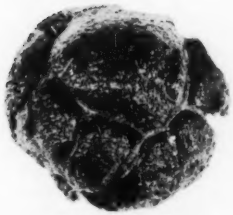
Following successful trials over the past several years, the National Science Foundation has made grants to eighty-six colleges and universities throughout the country this year to support summer institutes specifically for high school teachers as a positive step toward improving the teaching of science and mathematics.

Enrollment in these institute programs is limited to about 50 persons per school, and the teachers selected for participation receive a stipend to aid in meeting expenses for the duration of attendance at the institute. In 36 of the 86 schools the grants have been made in support of programs offered by one department, whereas in 50 of the schools the programs involve participation of two or more departments.

Among the 36 single department summer institutes, only one deals with earth sciences: the one sponsored by the Department of Rural Education at Cornell University. Of these 36 colleges and universities, 29 have departments of geology and/or geophysics. Among these 29 are some of our largest and finest departments of geology.

Further, of the 50 summer institutes affording interdepartmental cooperation, only 16 are including instruction in the earth sciences. Of the 16 schools including earth sciences, three do not have a department of geology as such. Of the 33 schools where earth sciences are *not* included in the program, 26 have departments of geology or geophysics. In these 50 summer institute programs, 49 will offer chemistry, 48 physics, 37 biology, 16 earth sciences, and 11 astronomy.

It is understandable that departments of geology are not likely to take the initiative in obtaining a summer institute for high school teachers, since geology is rarely taught as a high school course. On the other hand, the profession is passing up a wonderful opportunity to create an interest in geology by its lack of participation in programs such as the summer institutes.



OUR COVER

Tektite from Paracale Bay, Philippines. Surface of tektite is rough, with black obsidian-like appearance. Approx. 1.8X. *Photo by courtesy of the National Museum.*

The AMERICAN GEOLOGICAL INSTITUTE is a non-profit professional service organization established and managed by the scientific societies in the fields of geology and geophysics in cooperation with the National Academy of Sciences-National Research Council. It is the instrument of the profession serving and advancing the welfare of the geoscientist in matters relating to education, professional responsibilities and government relations. It is an active member of the Scientific Manpower Commission. It also functions in the stimulation of public education and awareness of the earth sciences, through career literature, the scouting program and other channels of communication.

GEOTIMES is the news magazine of the geological sciences. It reports on current events in the earth sciences, public education and public relations efforts throughout the profession, as well as appropriate legislative and governmental issues. It announces scholarships, fellowships, publications and new developments. It provides a forum for discussion of timely professional problems, and affords a common bond between the many specialized groups within the earth sciences.

TEKTITES

by

VIRGIL E. BARNES

Among the earth's unsolved mysteries are the fascinating, dark, irregularly shaped bits of glass known as "tektites." Wherever they are found, all over the world, man, civilized or primitive, has recognized them as something curious, intriguing, and puzzling. Scientists have been aware of them for 170 years, and many and varied origins have been suggested. That they are of extraterrestrial origin seems likely.

These remarkable pieces of glass, ranging in weight from less than a gram to approximately eight kilograms, are of varied shape and surface sculpture. Most are black, some are green, a few are yellow. Some are lustrous and some have a delicate sheen that is not easily detected, but once the eye is trained these objects are readily recognized at a distance of several feet even when associated with pebbles of similar color and shape. This sheen, caused by etching, comes from minute alternating ridges and furrows which swirl over the entire surface, faithfully following the contorted internal structure.

Tektites are present on every continent except possibly Antarctica and South America. In Europe they are found in Czechoslovakia; in Asia, on many islands and on the mainland in a vast area around the South China Sea; in Australia, over the southern two-thirds of the continent and the island of Tasmania; in Africa, in the Ivory Coast and the Libyan Desert; and in North America, in Texas. The Libyan Desert glass is not universally accepted as a tektite. Another unusual type, Darwin glass, is found locally on the island of Tasmania.

Each of the major occurrences is thought to be one shower. Those in Czechoslovakia are weathering out of Miocene strata; those in Texas, first described by the writer, are thought to be weathering out of Eocene strata; and those in Australia may be recent.

Most tektites have been strongly modified by etching and spalling, and only a few tektite groups, such as those from Australia, are so recently arrived on earth that individual specimens have been little affected and still retain their original shape. Australian tektites are classified in the following seven categories on the basis of their primary shapes: tear-drop, dumbell, canoe, boat, lens, oval, and button, the latter a form with a central lens and an outer flange.

The most persuasive evidence of extraterrestrial origin of tektites is furnished by the button form, which definitely shows two periods of melting, the flange having formed later than the central disk. Two periods of melting can easily be explained if a sphere of glass plunged into our atmosphere. It would melt on the forward side, the area of greatest friction. The first melt products would be dragged off because of the air friction, but as the fragment slowed, some glass would flow toward the lee and curl to form a flange. This is the form of the button.

Even with this almost incontrovertible evidence that tektites are extraterrestrial, much remains to be explained. Chemically they correspond more nearly to argillaceous sedimentary rock than to any other rock group on earth. The isotopic composition of oxygen in tektites is more nearly similar to that in marine sediments than in igneous rocks and ordinary meteorites. Uranium also is present in tektites in about the same amount as in sedimentary rocks. Tektites are vastly different in composition from the

[1] Our author, Dr. Virgil E. Barnes, is a member of the staff of the Bureau of Economic Geology, University of Texas, Austin, Tex. He is a native of the state of Washington, took his Ph.D. at Wisconsin and has been with the Bureau since 1935. In addition to being a student of tektites and meteorites, he has also worked on stratigraphy of lower Paleozoic rocks and in other fields of geology.

ordinary meteorites with which we are familiar and also are significantly different in composition from most igneous rocks.

Research by the writer prior to 1940 revealed other evidence indicating the formation of tektites from sedimentary rocks. Many tektites contain small glassy particles about the size of small sand grains;

Button form of tektite (glass meteorites) from Australia, to scale. The top photograph shows results of fusion stripping as the tektite plunged into the atmosphere. Other views show contorted flow structure and outer flange.

in some groups, such as those from Czechoslovakia, these grains have been drawn into filaments which in part are contorted. The more nearly equidimensional grains were isolated, their index of refraction measured, and the index found is that of fused quartz.

The presence of fused quartz particles indicates that tektites were derived from rocks containing small particles of quartz. Rocks with quartz particles of this size are almost exclusively sedimentary rocks, especially the ones composed mostly of clay. The presence of identical silica glass particles in glass fused from Eocene shale in a carbon arc, in glass formed by broken power lines arcing through the soil, in glass formed on mountain peaks by the striking of lightning, and in glass formed by the first atomic bomb exploded in the New Mexico desert, can not be safely disregarded when the origin of tektites is discussed.

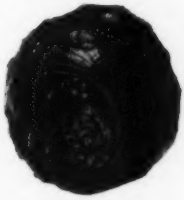
Tektite (glass meteorite) from Lee County, Texas, to scale. This is a spalled form showing circular impact scars. Photograph by Elbert King.

This mass of evidence in favor of most tektites being formed from sedimentary rocks influenced Urey to suggest that asteroids a mile or two in diameter may have plunged to earth fusing several thousand cubic kilometers of rock and that the resulting explosion would be sufficient to distribute the glass debris over wide areas. No evidence has been found of such enormous explosion craters. Also asteroids would fuse as readily as the rock, and if asteroids have the composition of meteorites, then glass having the composition of meteorites should also form. No such glass has been found associated with tektites.

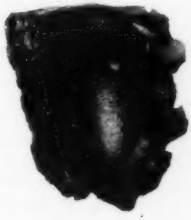
continued on page 16

TEKTITE CONFERENCE
June 17-18, 1957
Washington, D. C.

sponsored by Div. of Earth Sciences, National Academy of Sciences — National Research Council.



Tektite (glass meteorite) from the island of Billiton, to scale. The swirling flow structure is revealed by etching which took place while the specimen lay in the soil.



Tektite (glass meteorite) from the Island of Hainan off the coast of China, to scale. This is a fragment of a large bubble form.

A little from a lot.....
would go a long way

In the February 1957 issue of GeoTimes we presented to the profession an analysis of the income and expenses of the American Geological Institute. We indicated at that time that the minimum basic cost of staffing and operating AGI is now being borne by the 14 Member Societies. Advertising income potentially can pay most of the cost of printing and distributing of GeoTimes, but this source of income is not expected to reach full development until 1958-59. Funds from the Member Societies and from advertising are not adequate to provide a staff for GeoTimes, so other sources of money must be developed. Funds which would make it possible for the AGI to undertake special projects on behalf of the profession, individuals within the profession, and the general public also must be derived from other sources.

The tough problem of supplying this additional support has been given careful study by the AGI Finance Committee headed by Dr. E. A. Eckhardt. It was recognized that, in order to provide adequate finances, the program had to be broad-based, adequate, effective, and palatable. It was further recognized that all aspects of such a program could not become effective overnight.

It was concluded that the responsibility for the basic operation of the Institute and of GeoTimes rests with the profession itself. With the Member Societies now meeting most of the costs of maintaining the Institute office, GeoTimes is left to be provided for by funds from other sources. To aid in the financing of GeoTimes, the Institute has turned to individuals in the profession—either as members of the Committee of One Hundred for the AGI, or through a more modest contribution via the "yellow envelope campaign." Although the level of individual contributions is quite different in these two groups, it is a matter of simple arithmetic to find that a lot of geologists-geophysicists contributing a couple of bucks can match their more affluent colleagues who become members of the Committee of One Hundred.

The aid of Industrial Associates is also sought by the AGI to provide funds for printing and distribution of career literature, preparation of other educational reports, and for activities directed toward public education and public relations. These funds are vital, if the Institute is to be of growing service to the public.

In January 1957 the National Science Foundation, recognizing the difficult financial position of the American Geological Institute, made a grant of $20,000 to the Institute for meeting general operating expenses. However, the AGI can claim only that portion of the $20,000 which is matched by new funds developed by the Institute on or before November 1, 1957. *Funds from individuals in the profession are still short of the goal in the matching of the $20,000, so we need all of the help that you—as individuals in the profession—can give.*

Committee of One Hundred for AGI

Individuals in the profession are invited to pledge membership in the Committee of One Hundred for AGI. In so doing, they agree to contribute $100 per year or more in cash or investments for a period of five years. Members of this committee as of May 14 are listed below. Their contributions have been in cash, common stocks, and, in one instance, gas royalties.

Robert F. Aldredge
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Smaller Contributions

Many contributions, ranging from $1 to $50, have been received from numerous individuals within the profession, to aid in the support of the Institute's program and of GeoTimes. Most of the contributions came in response to the "yellow envelope" campaign of the February issue of GeoTimes. These contributions have been most appreciated, but the success of the campaign has left much to be desired.

What might have happened–

10,000 geoscientists contributing an average of $2 . . . . . $20,000

5,000 geoscientists contributing an average of $2 . . . . . $10,000

What actually has happened–

780 geoscientists have contribute an average of $4.10 . . . . . $3,200

From this we see that contributions of a very nominal sum by a large cross-section of GeoTimes' readers could mean the solution to the financing of GeoTimes. We believe that, if the magazine is worth mailing, it is worth a $2 annual contribution for its support from its recipients.

Anyone can see that response in this area of the AGI financial program is far below the objectives that might reasonably be expected.

Industrial Associates

The growing list of Industrial Associates of the American Geological Institute is largely due to the efforts of Francis Cameron, for mining, and E. A. Koester, for petroleum, of the AGI Finance Committee. The funds contributed annually by the Industrial Associates are important to the Institute's work in public education and public relations. Listed below are the companies who are enrolled as Industrial Associates:

Amerada Petroleum Corp.
**American Metal Co., Ltd.*
**American Potash & Chemical Corp.*
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Arabian-American Oil Co.
Arkansas Fuel Oil Corp.
**Bethlehem Steel Co.*
Creole Petroleum Corp.
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Gulf Oil Corp.
**M. A. Hanna Co.*
**Phelps Dodge Corp.*
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**St. Joseph Lead Co.*
**Shell Oil Co.*
Socony Mobil Oil Co., Inc.
Sohio Petroleum Co.
Standard Oil of California
Standard Oil of New Jersey
Texas Gulf Producing Co.
**Texas Gulf Sulphur Co.*

* New in 1957. One contributing company has asked to remain anonymous.

SCUBA Directory Proposed

In recent years the use of Self-Contained Underwater Breathing Apparatus (SCUBA) has become an important adjunct to marine research and engineering. Except for certain local areas, interchange of technical information between scientists and engineers using SCUBA appears to be very limited. In order to promote better liaison between persons using SCUBA, the U. S. Navy Electronics Laboratory is conducting a survey in the hope that enough data can be accumulated to publish a report describing various aspects of SCUBA use.

To get the necessary information for this report a questionnaire was formulated by a group consisting of diving personnel from the Scripps Institution of Oceanography, La Jolla, California; Navy Underwater Demolition Unit One, Coronado, California; Navy Combat Camera Group, North Island, and the Navy Electronics Laboratory, San Diego, California. The data accumulated from the returned questionnaires will be tabulated and summarized in a Navy Electronics Laboratory Report. The names, addresses and affiliations of all contributors will appear in this report so that it may serve as an International Directory of SCUBA Personnel. A complimentary copy will be sent to all persons who have contributed by completing the questionnaire.

Questionnaires have been mailed to all diving personnel whom we know, both in this country and abroad. Because our list may not be complete, we would appreciate the names of any individuals utilizing SCUBA in their scientific or engineering work who may not have received a copy. We would also appreciate any supplemental information that you might care to add.

Copies of the questionnaires may be obtained from: Robert F. Dill, *Sea Floor Studies Section, U. S. Navy Electronics Laboratory, San Diego 52, California, U. S. A.*

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FOREIGN TRANSLATIONS REPOSITORY

SLA Translations Center

by
RALPH E. O'DETTE

One of the first problems to arise in the translation of foreign scientific and technical literature is duplication of effort. Is there not some way to find out if a paper has already been translated "somewhere" before money and time are spent preparing a translation?

A mechanism is available through the Special Libraries Association (SLA) Translation Center, John Crerar Library, 86 East Randolph Street, Chicago 1, Illinois. While the Center may not yet provide a perfect guarantee against duplication of translation effort, it can be of considerable assistance. The purpose of these comments is to describe the Center and the availability of its services to readers of GeoTimes and the organizations with whom they are affiliated.

Duplication of effort in translation has always been a problem, especially to translators and to people who spend money buying translations. Such duplication may be necessary when, information is urgently needed or when careful verification of the content of a paper is vital, but accidental duplication is wasteful.

Technical librarians were among the very first to try to cut down inadvertent duplication. Some years ago the SLA set up a modest Translation Pool and announced they would gratefully receive gifts or loans of technical translations and would act as a clearing house by announcing the availability of these translations.

Skipping a great deal of history which involves the dedicated efforts of many members of Special Libraries Association as well as the excellent contributions of the Science Division of the Library of Congress, we arrive at the present form of the SLA Translation Center, jointly supported by grants from the National Institute of Health and the National Science Foundation.

At the end of February, 1957, the Center had over 14,000 translations on hand and was adding to its collection at the rate of about 500 per month. These translations were in all fields of science and technology and represented publications from many different languages. An indexed monthly bulletin of 56 pages, *Translation Monthly*, was going to over 900 subscribers at a yearly subscription cost of $5. *Translation Monthly* classifies recent receipts of translations by broad subject matter and includes a monthly author index.

Photostat or microfilm copies of translations on file are sold by the Center at cost, which cost, parenthetically, is considerably less than the cost of making the translations.

Probably the largest contributors to the Center's collection are agencies of the Federal Government, although industrial organizations are playing an increasingly more active part. The key to this latter source of translations—industrial scientists and technologists—has been the guarantee of the Center that contributors may remain anonymous if they wish. For example, a chemical company might not like its competitors to know it had obtained translations of a series of papers on a new organo-metallic compound. But since these papers originally appeared in the open literature, they divulge nothing about the company's interests when the company's name is removed. The same procedure is used successfully by certain agencies of government who are perfectly willing to have their open literature translations disseminated, so long as the agency remains unidentified.

The matter of cooperation in translation —prevention of duplication—might seem

(1) Ralph E. O'dette, author of this article is Program Director for Foreign Science Information, National Science Foundation, Washington, D. C. Readers interested in more information on this area of NSF activities are referred to *Science*, March 29, 1957, Col. 125, No. 3248, pp. 579-585.

like so many other suggestions of virtue in that the suggestion may be more widespread than the action proposed. Fortunately, however, the translation center concept has been snowballing, probably the result of what sociologists might call "enlightened self-interest."

The growth of the Center has been gradual and not without difficulties. The broad plan is to develop a translation collection and information center which can either provide or locate translations throughout the world. The latter service is important, especially in view of the excellent collections among the British Commonwealth nations. It is planned also in the near future to provide a service through which an inquirer can determine which of the many active commercial translators may already have prepared a translation of a particular paper.

There have been criticisms to the effect that the Center concentrates too heavily in certain fields. The fact, of course, is that the Center concentrates on what is sent to it. If, for example, the readers of this article were to clean out their files of translations and send them to the Center as gifts or loans, the Center would probably shortly thereafter be one of the world's most important sources of translated literature in the earth sciences.

If an individual or organization wishes to contribute to the Center's holdings by giving copies of translations, the preferred form would be an original typewritten copy, with illustrations and an accurate citation to the original journal. Lacking the original typed copy, any clean, legible reproduction would do. The same criteria hold for loan copies, except in this case the Center will keep the translation only long enough to microfilm it for the files. In either case, what is needed most is clean legible copy, illustrations (including equations, etc.) and the bibliographic citation. In case such polished copies are not available, the Center will do its best to reproduce the best copy made available to them.

Immediate use of the Center may be obtained in two ways. A subscription to *Translation Monthly*, described above, provides information on current receipts of translations. In addition, the Center will search its holdings for particular items upon request. In any event, the SLA Translation Center stands ready to be of service to the earth scientists, to add their contributions to the collection of translations, and to make its collection available to all in the interests of better scientific communication.

PIOSA Congress

by
Rhodes Fairbridge

Notices of the third congress of the Pan Indian Ocean Science Association ("PIOSA") announce that the meeting will be at Tananarive, capital of Madagascar, probably Sept. 20 to Oct. 2, or a week later. PIOSA had its first (formative) meeting at Bangalore, India, in 1951, and its second meeting, a full-scale congress at Perth, Western Australia, in 1954. Published "Proceedings" of the First and Second Congresses may be obtained from Prof. A. D. Ross (at Balnagown, Golf Links Rd., Albany, Western Australia) at a cost of 7/6 and 37/6, respectively, post free (approx. $5.50).

Geology is well represented in PIOSA, as evidenced by 23 papers offered at the last meeting, notably an outstanding symposium on "The Charnockite Problem," with contributions by geologists from Madagascar, Mozambique, India, and Western Australia. Another symposium (almost inevitably!) dealt with "Gondwanaland" and others with "Eustatism in the Indian Ocean Area," and with "Tertiary Stratigraphy."

The section on Geography and Oceanography at the Perth meeting also contains papers of possible interest to geologists. The present writer contributed a detailed analysis of the geographical and structural limits of the Indian Ocean; a directory of oceanographers was completed, and plans were set up for a "Handbook of the Indian Ocean Area," which will contain basic articles on the geology, geomorphology and oceanography. Almost all papers are in English.

At the Madagascar meeting, the following symposia may be of particular interest: "Tectonic maps of the Indian Ocean," "The Gondwana Continent: its fauna and flora," "Hydrology of Arid Zones," "Chronology of the Precambrian," etc. There will be organized visits to the state geological survey, the geographical service, the oceanographical laboratory at Nossi-Be, as well as extensive excursions all over the country of Madagascar, which is somewhat larger than California, and has a population of over 4 million people, mostly of Indonesian extraction.

Information can be obtained from the secretary of the THIRD CONGRESS OF PIOSA, *Dr. Renaud Paulian, Institut de Recherche Scientifique, B.P.434, Tananarive, Madagascar.*

MANPOWER *in a column —*

By HOWARD A. MEYERHOFF
Scientific Manpower Commission

Each year the National Education Association Research Division prepares a definitive report on the supply of and demand for high school teachers. From 1950 to 1954 the annual reports made grim reading, for the supply of teachers went rapidly down and the demand went steadily up. In 1955 the tide turned, and since then the number of graduates qualified to teach in our high schools has risen. The 1957 figure reveals an increase of nearly 10 percent over the preceding year.

Encouraging as the situation is, it provides no particular basis for optimism. In the year 1950, 26.6 percent of all college graduates prepared for teaching. In 1957 the percentage was approximately 32. Unfortunately, only 70.7 percent of those who qualified for teaching positions actually turned up in classrooms in September 1956. Not only is the attrition high in each year's graduating class, but the turnover in the profession is large. The annual supply is barely adequate to fill vacancies created by those who leave the profession, not to mention the new positions created by the rapidly expanding school-age population.

Geology has just about disappeared from the high school curriculum, but earth scientists are still concerned about the caliber of the instruction received by high school students who may embark upon careers in geology, geophysics, and related earth science subjects. The NEA has complete statistics on the demand for teachers in September 1956 in 32 states, plus Alaska and the District of Columbia, and it has equally complete data on the way the demand in these states was met. Some of the figures are illuminating: In English, for example, there were 4,211 vacancies, but only 3,080 teachers trained in English were available. To fill the gap, 716 teachers trained in social studies were transformed into English teachers, and recruits were drawn from virtually every other field.

From the standpoint of a scientist, the situation in mathematics was even worse. There were only 1,302 majors in mathematics to fill 2,237 vacancies. Eighty teachers of physical education, 123 of social studies, and 59 English teachers were pressed into service to function as mathematicians. In the sciences there were twice as many biologists as were needed, and the supply of chemists was greater than the demand by 22 people.

The prospective science major may not be seriously handicapped by indifferent instruction in biology, chemistry, or physics, but he is permanently handicapped—not to say disabled—by poor preparation in English and mathematics. With the supply of mathematics teachers 43 per cent short of the needs, it is not surprising to find that two thirds of the students who enter engineering schools are not prepared to take freshman engineering mathematics. As for the average freshman's command of English, . . .

AAPG Project Benefits Profession

NEW CORE REPOSITORY CATALOGUE AVAILABLE

Availability of a catalogue of sample and core repositories listing and describing repositories of the United States, Alaska, and Canada was announced by the AAPG Committee on Preservation of Samples and Cores at the recent St. Louis Convention of the petroleum geologists. The catalogue was compiled by the committee under the chairmanship of Ralph Taylor and has been reproduced by CORE LABORATORIES, INC., 3918 Hine Boulevard, Dallas, Texas. *Copies are obtainable free on request by writing the home office or by contacting any one of the Core Laboratories offices which are located in 39 different cities of the United States and Canada.* The title of the catalogue is "SAMPLE AND CORE REPOSITORIES OF THE UNITED STATES, ALASKA, AND CANADA."

The catalogue consists of a listing by states and provinces of each known repository in the United States, Canada, and Alaska. Where available, information is included on the sample coverage currently in the repositories and the procedures to be followed, and the facilities available for study of the samples and cores.

Geologists knowing of valuable samples and cores that are likely to be destroyed and should be preserved for future use are urged by the AAPG committee to familiarize themselves with existing repositories in their area, as listed in this free catalogue, and make every effort to see that samples and repositories are brought together.

Boy Scout Geology Kit

Scoutmaster's
Program Helps

Sponsored by

Above is a reproduction of the cover art of the Geology Kit being prepared for distribution by the API in conjunction with the AAPG-AGI Boy Scout Committees.

The layout and final copy for the Scoutmaster's program aids for the Geology Month for Boy Scouts in October were approved early in May at a meeting at American Petroleum Institute headquarters in New York. Present schedules indicate that distribution of the Kit will coincide closely with the Fall issue of the Program Quarterly published by the BSA, both of which should be printed by June 15. Geologists who are working with local Scout executives on October plans will be sent copies of both of these items in the first mailing (if the AGI has been notified).

The efforts of many people and organizations have gone into the material of the kit. The U. S. Geological Survey printed the descriptive folder (in five colors) on topographic maps. A large section on how to collect, prepare, and exhibit rocks, minerals, fossils, etc., and directions for several games were written by Gerald M. Richmond of the Survey's Denver office. Mark Pangborn, in the Survey library, prepared the list of films and a list of interesting books on geology to supplement those listed in the Geology merit badge pamphlet. Luna B. Leopold, Chief of the Water Resources Division, wrote the section on domestic water supply. The patterns for crystal forms were designed and drawn by Howard T. Evans, Geologic Division. These can be cut out and assembled into three-dimensional models. Chalmer L. Cooper wrote the introduction of the section on field equipment. The introduction includes greetings from 20,000 geologists, safety precautions for field trips, the use of the Geology merit badge pamphlet, and how to find a geologist to help with the program. The other section tells how to obtain topographic maps and aerial photographs, common tools that are useful on field trips and how to make a clinometer.

W. Taylor Thom, Jr., of Princeton University, wrote an interesting account on the search for the mineral raw materials required for our modern living.

Instructions for trading collections were prepared by Don Barnett, Assistant Director, Boy Scouting Service.

The expense of printing and distributing the Kit has been assumed by the American Petroleum Institute. The excellent layout and design of the Kit were prepared by the staff of the Oil Industry Information Committee of the API, which has also prepared a leaflet on careers in petroleum. Geology Month for Boy Scouts includes Oil Progress Week (Oct. 13-19) and the API will include information on the Scout program in its publicity. The October program will also be the subject of an article of the Fall issue of the API quarterly.

Early in May a map of the United States, showing the 538 council areas, was distributed to all groups of geologists. Shaded areas on the map show council areas where geologists have volunteered to assist the Scout executives with plans for the October program. Another edition of the map will be prepared about July 1. If you are not sure the council in your area is covered, phone the Scout executive or write to the AGI office.

NOTE: Many requests, some serious, and some a bit facetious, were received by the Dept. of Geology which ran the now famous Box 284 adv., April *GeoTimes*. The adv. was placed in all seriousness—the coffee pots and hammers are not available without their owners.

SUSAN B. ANTICLINE, foremost female geologist of the world says: "We all have our faults—they're perfectly normal."

Let's TRAIN Our Geologists

by
WILSON M. LAIRD

At the risk of damning myself before all my colleagues in the geological profession, I would like to make a few comments on the current situation relative to the training and preparation of the present day geological graduate. I would like to make it clear that I am speaking both as a State Geologist who hires geological graduates and as a Department Chairman who passes on admissions of students to the Graduate School of our University. Frankly, I find in both capacities that many students applying to us are deficient on many counts. In other words, the average geological graduate compared to those in the other sciences is poorly, and I emphasize poorly, prepared.

The problem of preparation of these students I will discuss later but there are a few preliminary remarks that should be made before the entire blame is placed on the graduating senior. Frankly, he is poorly informed as to what is expected of him when he graduates and enters the geological field professionally. As a result he is not as strongly motivated as he should be.

The blame for this lack of information concerning what is expected of him can be placed squarely and firmly on the shoulders of the professors in many of our colleges, particularly those of the liberal arts persuasion. It is well and good to be well rounded in the humanities and similar desirable subjects; but unless the student is well grounded in the fundamentals of geology and basic sciences, he has no adequate foundation for specialized training he will receive in industry, government, or graduate school.

To come out of college with a major in geology of only 30 hours or less, little or no mathematics and inadequate training in chemistry and physics places a grave handicap on the young man who has just graduated. I do not think it is entirely his fault, as I know from bitter *personal* experience that in most cases he was not told that he must have all these subjects or be regarded as an inadequately prepared neophyte in the geological profession. ***This is the fault of his professors and no one else.*** Basically, the difficulty appears to be that 125 hours are commonly regarded as all that a student can be expected to take during 4 undergraduate years. To be honest, the student can take more than this in 4 years, or if he can't, then he should be resigned to an additional year of work on the undergraduate level.

I have criticized the present situation and may rightfully be asked what my solution is. It is as follows: A student, to be regarded as being well prepared as a bachelor with a major in geology, should have the following minimum courses:

GEOLOGY
- General Geology
- Mineralogy including Optical Mineralogy
- Structural Geology
- Petrology
- Geomorphology
- Paleontology
- Sedimentology
- Stratigraphy
- Economic Geology
- Thesis and seminar
- Field Geology (at least 1 summer course)

BASIC SCIENCE COURSES
- General Chemistry (including elements of qualitative and quantitative analyses)
- Physical Chemistry
- Physics
- Mathematics through Calculus

HUMANITIES
- English (and more English)
- Speech
- History
- Economics
- Political Science
- Foreign Language

One should note that the above-listed courses in geology are basic and fundamental and are not specialized technique-type courses. Specialized or technique-type courses should be left for electives or for some subsequent training.

If we are to improve the quality of the geological profession we must impress the young men entering it that geology is becoming increasingly more quantitative and the need for the training outlined above

[1] Dr. Wilson M. Laird is Chairman of the Department of Geology at the University of North Dakota and is State Geologist of North Dakota. He is recognized for his work in stratigraphy and in 1948 was the recipient of the Presidential Award of the AAPG.

AGU Undertakes Russian Geophysics Translations

The National Science Foundation has made a grant of $22,400 to the American Geophysical Union for the translation and publication of an English edition of *Izvestiia* of the Academy of Sciences, USSR, Geophysics Series (1957), and to make a study of *Trudy* of the Geophysics Institute of the Academy of Sciences, USSR, to see which articles within this series should be translated. The American Geophysical Union has worked out arrangements with Pergamon Press (122 East 55th Street, New York 22, N. Y., and Pergamon House, No. 4 Fitzroy Square, London W.1, England) to undertake the actual work of translation and publication under the guidance of an editorial board designated by the AGU.

Subscriptions should be placed with the Pergamon Press at one of the addresses noted above, but other inquiries should be directed to the American Geophysical Union at 1515 Massachusetts Avenue, N.W., Washington 5, D. C.

It is anticipated that another phase of the project relating to the publication of abstracts of geophysical papers from Russia, other Eastern European states, and the mainland of China may yet be approved. In connection with this, there is the plan to make a study of the needs of American geophysical scientists to see what translations will best serve our requirements.

In connection with the project, there is probable need for additional assistance in translation. Persons who have competence in some particular phase of geophysics and a knowledge of modern scientific Russian, who are willing to devote a few hours a week at such translating work, should get into touch with the American Geophysical Union. Payment will be made for the translating work.

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is imperative. At the present time there are, in my opinion, too many graduates in geology who will not be able to enter the profession because they are poorly prepared. There still are openings for adequately trained personnel; but employers are becoming more selective, and only the graduates adequately prepared may expect to obtain geological employment. Let's be fair with these boys and really prepare them or tell them that they may well do better in some other field of endeavor.

GEOLOGY in the Public Eye

by Robert L. Bates

Last fall, Professor E. S. C. Smith of Union College presented 13 thirty-minute TV programs on geology over Station WRGB, Schenectady, New York. The series was sponsored by a council on educational TV in the eastern Mohawk Valley. The time, 10:30-11:00 A.M., was donated by the station, which claims over half a million receivers. No exact poll was taken, but it is believed the programs were watched by several thousand people.

Each program was a lecture demonstration, using models, actual specimens (e.g., stalactites dripping water on stalagmites), short motion pictures, and slides. For the movies and slides Smith used rear projection on a window-size screen, which he says worked very well. Some of the topics: what geology is, caves and caverns, water, wind, valley and continental glaciers, volcanoes, earthquakes. A most important topic was that of the last program, namely geology as a career. Here was summarized what geology has done for civilization and what opportunities there are throughout the world for people with geological training.

Professor Smith reports that the series took (a) time for planning, (b) effort in preparation, and (c) money for models and illustrations. But he implies that these problems are by no means insurmountable, and says he enjoyed doing the series and would probably do it again if asked. Certainly he helped place geology squarely in the public eye.

One last word (it is fervently hoped) on the geological markers in Wind River Canyon. Bill Thomas of the Wyoming Survey reports that there *are* authentic, glass-enclosed displays at either end of the canyon, with cross sections, columnar sections, and elementary descriptions of the geology. It is a pleasure to get this straight. Memo to future critics of highway signs: Don't pick on Wind River Canyon!

Recent additions to the layman's literature: *The Geology of Orton and Mount Mansfield State Forests*, by R. A. Christman of the Vermont Geological Survey; the third edition of *Kansas Rocks and Minerals*, by Tolsted and Swineford of the state survey; and *Guide for Beginning Fossil Hunters*, by C. W. Collinson, Illinois Survey.

EASTERN GEOLOGY TEACHERS MEET

The annual spring meeting of the Eastern Section of the Association of Geology Teachers was held at Princeton, New Jersey, on April 19 and 20, 1957. The Geology Department of Princeton University was host. Two symposia, two field trips, and the Annual Dinner were features of the meeting. Forty-five geologists attended.

The symposia, held in Guyot Hall of the University, were: 1) a slide symposium, and 2) the teaching of elementary historical geology at colleges and universities. Some of the papers of this latter symposium will probably be published in the Fall Issue of the Journal of Geologic Education. Although the speakers at the symposium had many and diverse ideas on the teaching of historical geology, they all agreed that textbooks should be deemphasized since they are apt to bore the students, especially those going no further into geology. They all agreed that discussion of principles can enliven and make more meaningful the catalogue of events and that taking up problems should be a most important feature of the course.

The field trips included one to the coastal plain to study Cretaceous and Tertiary formations and their fossils and the other to study the three upper Triassic formations of New Jersey.

Newly elected officers of the Eastern Section of A.G.T. are, *President*, ERLING DORF, Princeton; *Vice-President*, J. DONALD RYAN, Lehigh; *Secretary-Treasurer*, MAURICE ROSALSKY, C.C.N.Y.; and *Editor*, LAWRENCE WHITCOMB, Lehigh.

On Saturday, December 1, 1956, the Eastern Section of A.G.T. sponsored an all-day visit to the Geology Department of the City College of New York, selected as an example of a department facing the problems of operating in a big city.

1958-59 FULBRIGHT PROGRAM ANNOUNCED

The 1958-59 Fulbright program will afford U. S. geologists and geographers the opportunity to visit Australia, Pakistan, and the Philippines. Copies of the program announcement, application forms, and additional information may be obtained from the Conference Board of Associated Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C.

TEKTITES *continued from page 7*

Another bit of evidence pointing toward the extraterrestrial origin of tektites is furnished by the extremely low pressure found in tektite bubbles. Hans Suess found these bubbles to be very good vacuums, indicating they formed where pressures were low, or that they possibly formed from water vapor which subsequently dissolved in the glass. In view of the small amount of water found upon analysis, the latter alternative is believed improbable. How this evidence could fit into the explanation of the origin of tektites will be mentioned later.

The chemical composition of most tektites has been shown to be remarkably similar to that of terrestrial sedimentary rock, but evidence is against their having been formed on earth. Perhaps the answer is that they are formed from sedimentary rock that blanketed another planet. A planet on which sedimentary rock could form must have been of similar size to the earth and have been encompassed by an atmosphere and a hydrosphere.

That another planet existed in the solar system has often been discussed. If such a planet, partly blanketed by sedimentary rocks, was destroyed, then the ultimate origin of tektites could easily be explained. In such a disaster, surface material in the vicinity of the zero point would be volatilized, that which was farther away would be melted, and the rest would be disrupted without being melted. The gasified and liquefied materials would be violently jetted or spurted in many directions, perhaps reaching a point of nearly zero pressure before solidifying, thus accounting for the low pressure in the bubbles. These jets perhaps formed comets, from which tektites may have come to earth.

Each comet should be somewhat different in composition from every other comet, because each would be derived from a different part of the nonhomogeneous parent planet. Likewise, considerable variation in composition would exist in each comet because of local variation in the homogeneity of the parent planet. Such variations are observed between and within the various tektite showers.

One type of glass from the Libyan Desert, for example, is nearly pure silica and would have been derived from sandstone or quartzite. Others may have been formed from metamorphic rock, and some, such as those from the Ivory Coast and a few in Texas, may have been formed from igneous rock. Most other tektites appear to

DEAR EDITOR:

I have read with interest the observations on geology enrollment by Dr. Patton in the April GEOTIMES, and I cannot refrain from commenting on my disagreement with his views. At Waynesburg College the enrollment in general geology compares favorably with those in the usual sciences. We offer the course as a "laboratory course." We do not feel that the course is "artificial rather than natural." Nor do our students suffer a "distinct loss of interest." Map study, hand-recognition of minerals and rocks, simple mineral determination, examination of earthquake records from our seismic station, and the study of fossil collections are part of the work. From 12 to 15 field trips are taken in fall and spring. On these trips we study erosion, drainage, structure, stratigraphy, economic geology and fossil occurrence. We feel that a course of this type is better than having the "laboratory science requirement" dropped. We believe that we are conducting a good, fruitful, interesting course.

Very truly yours,
JAMES B. SCHROYER
Waynesburg College (Pa.)

DEAR EDITOR:

I disagree with Dr. LeRoy Patton whose article entitled *"Geology Enrollment"* appears in the April issue of GeoTimes.

Instead of weakening our freshman labs, let's strengthen them to illustrate the material discussed in lecture, to train the students to observe, collect and record data, and to *think*.

Let's make these courses rough so that as the student moves on to more advanced courses he knows what to expect and is ready to apply himself to the greater effort demanded of him. Let's use these courses to weed out the dullards.

If I were a company representative looking for geologists or with scholarships to hand out, I would look with greater favor on a school with high standards, though poorly equipped, than one specializing in mass-produced geologists. A poor teacher can make the most interesting course boring, while a good teacher can make a dull subject an exciting adventure. Let's not water down our courses for the sake of coddling prospective majors. To do so is to do a disservice to the entire profession.

Yours truly,
VICTOR COLOMBINI
Louisiana Polytechnic Institute

DEAR EDITOR:

In an attempt to alleviate "mystery" of missing yellow envelopes, will you please accept this white one containing a check to cover a Glossary of Geology and Related Sciences and a contribution to GeoTimes.

I appreciate the brevity and wealth of information relative to geologic activities found in between the red covers. Keep up the steam.

ROSS L. KINNAMAN

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have formed from argillaceous sedimentary rock.

The distance that the glass formed from the zero point should also affect its appearance. The frothy Darwin glass, for example, might have formed from an impure sandstone in the border area between the zones of volatalization and melting. Tektites from Czechoslovakia, as indicated by turbulent flow structure, probably formed on the hot side of the zone of melting and momentarily boiled. Most Texas tektites and other groups in which the silica glass particles are nearly equidimensional probably formed near the middle of the zone of melting.

The distribution of tektites in enormous showers of widely different ages can be explained better by the cometary theory than by any other theory so far suggested. If the origin of tektites dates from the destruction of a planet, then, as experimental data accumulate, more and more can be learned about the planet from which they were derived.

The recent acceleration of research on tektites, if continued, should soon replace some surmises with definite answers. Not only laboratory research is needed but field research as well. Continued investigation of the distribution of tektites on the surface of the earth and in geologic strata may furnish an important key to their origin. This type of research in Texas and elsewhere will be continued by the writer as opportunity arises.

Popular Geology in Print

by Mark W. Pangborn, Jr.

Books should be ordered by title and publisher from your local book dealer.

How To Know the Minerals and Rocks by *Richard M. Pearl* (McGraw-Hill, 1955, $3.75) is a useful identification book for beginning collectors, age 12 up. Fifty-five pages are given to generalities and keys to recognition (no blow pipe methods), followed by one page descriptions of 125 common rocks and minerals. Featured are 48 small color photos, many sketches, and a brief bibliography. Pearl's other volume, Rocks and Minerals (Barnes & Noble, 1956, $1.95) is an "armchair" book for the general reader, and covers mining and prospecting, crystals and gems, atomic and luminescent minerals, meteorites and ores, how-to-collect procedure, and includes a list of books and journals, a glossary, many photographs and 36 small color pictures of specimens.

Two "armchair" books for younger rockhounds are *Anne Terry White's* All About Our Changing Rocks (Random House, 1955, $1.95) and Rocks and Minerals and the Stories They Tell, by *Robert Irving* (Knopf, 1956, $2.75); Mrs. White's book will appeal to 10 to 14-year-olds; that of Irving, less well organized, is for the 8 to 12 group. Three titles for children under 14, emphasizing collecting activities rather than geology, are: The Story of Rocks, by *Dorothy Shuttlesworth* (Garden City Books, 1956, $2.50) handsomely illustrated, The Story of Rocks and Minerals, by *David M. Seaman* (Harvey House, 1956, $2.50) with poor color plates, and The Adventure Book of Rocks, by *Eva Knox Evans* (Capitol Pub. Co., 1955, $2.75).

Geologist *H. H. Swinnerton*, in The Earth Beneath Us (Little, Brown, 1955, $5) has, by concentrating on carefully selected topics, produced a brief yet vivid book on physical and historical geology. *Richard Carrington's* equally readable The Story of Our Earth (Harper, 1956, $3) traces the evolution of living things. Though these books were written by Britishers, illustrative matter is fortunately far from limited to British examples.

Pennsylvania Geology of the Clark Range, Obey City, Campbell Junction and Isoline Quadrangles (Tenn.). *by Charles W. Wilson, Jr., 13 p., 4 figs., 10 pls., 1956, Tennessee Dept. of Conservation, Div. of Geology, Nashville, Tenn.*

A folio containing maps and stratigraphic sections as well as a brief text dealing with the geology of coal and other mineral resources.

Treatise on Marine Ecology and Paleoecology; Vol. 2, Paleoecology, *Harry S. Ladd, Editor, 1077 p., 1957, Memoir 67, Geological Society of America, 419 West 117th St., New York 27, New York, $10.00.*

This volume, prepared under the direction of a committee of the Earth Science Division of the National Academy of Sciences–National Research Council, is destined to be a much consulted reference book in the library of the paleontologist and the research stratigrapher. The volume is in three principal divisions: *The Paleontological Record and the Origin of Life*, pp. 1-102; *Selected Analyses from the Geologic Record*, pp. 102-690 and *Annotated Bibliography from Marine Paleoecology*, pp. 691-1024.

Properties of Petroleum Reservoir Fluids, *by Emil J. Burck, pp. 190, 1957, John Wiley & Sons, Inc., 440 Fourth Avenue, New York, N. Y. $7.50*

Presented in this book are the fundamental concepts of fluid properties necessary to an understanding of the behavior of petroleum reservoirs. In addition to being well adapted as a college textbook, the practicing petroleum engineer will find it a valuable reference. Many useful correlations needed in solving reservoir problems are included. Previously published data are consolidated here with material published for the first time. The book is recommended particularly for those who have not had the benefit of formal courses in the rapidly developing field of reservoir engineering. *P.B.*

1957 Digest, Tulsa Geological Society, *Vol. 24, available from Publications Manager, TGS, P. O. Box 263, Tulsa, Oklahoma, $2.25*

PRINCIPLES OF ENGINEERING GEOLOGY AND GEOTECHNICS, *by D. P. Krynine and W. R. Judd, 736 pp., 1957, McGraw-Hill, New York, N. Y., $10.00.*

This book joins the fields of geology, soil and rock mechanics and other earth sciences as used in civil engineering into a cohesive unit of engineering geology and geotechnics. The first half of the book is an able exposition of this field. The succeeding chapters deal with engineering structures, situations and problems in which geology and soils are important. Had these chapters related their geology to their engineering as clearly as was accomplished in the chapter on tunnels the whole book would stand far above previous texts.

My chief criticism is directed at the failure of the authors to connect the type of engineering work or problem more closely with the geological conditions. The special conditions imposed on engineering works by the special characteristics of the major rock types and geological terrains are not grouped together and clearly stated and as a result, an engineer or a geologist, for that matter, entering a different geologic environment is hard put to it to find in this volume the fundamental problems of that environment.

Nevertheless, this is the most comprehensive single volume in this field in English and is certainly welcomed by the practicing professional. For the geological teacher who wishes to offer a course that will lay to rest the old saw about engineering geology being a "gut," this book should provide a firm foundation and a stimulating text. For both the engineer and geologist, the way is again paved for more intelligent and economic utilization of natural conditions in engineering works by two authors who know whereof they write.

SSP

DEAR READERS:

In April we ran an article on the Geologists' Association in Jamaica. In the accompanying footnote we erroneously referred to the author, L. J. Chubb, as Director of the Geological Survey of Jamaica. Mr. Chubb is a member of that organization, but the Director is Professor V. A. Zans, formerly of Riga University.

In the May issue we made another slip-up. It was Henry V. Howe who was elected to honorary membership in the SEPM, not Henry V. Moore.

Our sincere apologies for our errors.

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UNIVERSITY OF IDAHO, Moscow, Idaho. Needs Instructor or Assistant Professor of Geology to teach mineralogy, petrography, petrology, and ore deposits beginning September, 1957. Salary range $4,200-$5,000 depending on qualifications. Master's degree and doctorate in progress essential. Apply: Head, Dept. of Geology and Geography.

IDAHO BUREAU OF MINES AND GEOLOGY, Moscow, Idaho. Geological Engineer or Economic Geologist for investigation of mineral resources. Should have several years experience in economic geology, as well as writing ability, since most of the Bureau work is designed to result in publications. Salary depends on qualifications. Apply: Director.

BOX 81. Petrographer or chemist-petrographer, for research on portland cement concrete. Well-established firm in Ohio. Experience in this specific field not essential. Information about position supplied on request to those interested in this opportunity. State professional and personal qualifications. Salary to $7000 and bonus on merit.

STATE UNIVERSITY TEACHERS COLLEGE, New Paltz, N. Y. Associate professorship geology. Available September, 1957, starting salary $5748 for academic year. Apply: Dr. Donald S. Allen, Chairman, Division of Natural Science.

QUEEN'S UNIVERSITY, Kingston, Ontario. Special Lecturer in Petroleum Geology and Sedimentation for undergraduate courses, beginning September, 1957. Experience in Petroleum Geology and in either or both Sedimentation and Paleontology essential. Freedom for research and field work available during 4 summer months. Depending on qualifications an annual stipend of up to $5,000.00 is offered. Apply to: Head, Dept. of Geological Sciences.

MISSISSIPPI SOUTHERN COLLEGE, Hattiesburg, Mississippi has two staff vacancies beginning September, 1957: one paleontology and stratigraphy, rank associate to full professor, salary $5,000 to $6,000 nine months, relative to experience. Ph.D. must be completed; one mineralogy, petrology and structural geology, rank assistant professor, salary $4,000 to $4,400 nine months, M.S. and beyond expected. Write to: Olin T. Brown, Head, Dept. of Geology.

MONTANA SCHOOL OF MINES, Butte, Montana, requires associate professor or professor (Ph.D.) to be Head of Geology Department and instructor or assistant professor (Ph.D. preferred, M.S. minimum) for teaching staff, September, 1957. Applicants should have specialized in either mineralogy or paleontology. Possibility of working for Montana Bureau of Mines and Geology during summer months. Salary dependent on qualifications. Apply to Head, Dept. of Geology.

WESTERN WASHINGTON COLLEGE OF EDUCATION, Bellingham, Wash. Ph.D. or near, in Phys. Geol. Preparation in some of the following: Structural Geol., Mineralogy, Petrology, Crystallography, Geophysics. 1957-58 teach Gen. Geol., Mineralogy and Gen. Ed. Teaching experience. Write: Chm., Dept. of Science.

POSITIONS WANTED

BOX 288. GEOLOGIST-PILOT, B.S. Geology, commercial license and multi-engine rating, also instrument rating soon. 26, married, some Spanish. Wants to do exploration geology and/or flying. Will work anywhere.

BOX 292. GEOLOGIST, 36, married, 5½ years major company experience in the Four Corners and West Texas, including administrative, seismic and some surface work. Desires more responsibility. Excellent references.

BOX 293. GEOLOGIST, 28, married, B.S. Geological Engineering, M.A. Geology, 4 years experience as field geologist in western United States. Experience includes: exploration drilling, mine mapping, areal geologic mapping, structural and stratigraphic work, some geophysics. Prefers structural and stratigraphic work with a petroleum company. Foreign service acceptable. Military obligations completed. Available July 1957.

BOX 294. GEOLOGIST, B.S. in Geol., 30, veteran (survival instructor), 7 years surface, subsurface, seismic, and well-site experience, seeks challenging position — Foreign or Western United States—Available after May 15, 1957. Excellent references.

BOX 296. GEOLOGIST, 37, M.S. with course work completed for Ph.D. One year's experience in regional mapping, 4 years laboratory and field work in uranium mineralogy. Desires position in economic geology or mineralogy. Publications. Currently employed.

BOX 297. GEOLOGIST, Ph.D. Ten years' experience, mainly as head of geology department, but with wide variety of experience in applied work. Interested in any phase of geological problem solving, either as short-term assignments throughout the coming summer, or until September, 1958.

BOX 302. ECONOMIC GEOLOGIST, PETROGRAPHER, Ph.D., employed, extensively travelled, trained in Mineralography, and Microchemistry as applied to the study of ores, possessed of functional knowledge of French, German, Spanish and geological literature, and experienced in teaching the major phases of Earth Sciences. Desires position in teaching, exploration, or research. Fellow of Sigma Xi Etc., very good references, and available July 1957.

BOX 303. Oil-Finder, 39, single, 10 years experience in Colo.-Wyo. with major company. Interested in domestic or foreign work.

BOX 304. Research Geophysicist, Economic Geologist, 35, single, M.Sc., D.Sc., 12 years experience in teaching, research and field operations, presently doing research in geophysics, oceanography and structural geology

for contracting company. Desires teaching position with research possibilities or association with research laboratory or major company having world-wide operations. Business contacts in Europe and South America, speaks several foreign languages.

BOX 305. Geophysicist, 18 years of seismic interpretative and supervisory experience, mostly in Latin America, seeks more responsible position in foreign oil exploration. Married, 39 years old, employed.

BOX 306. Geologist, 33, family, A.B. plus 25 hours toward Master's plus 9 years of thorough experience in all phases of oil business. Desire teaching position in western college with graduate program and consulting possibilities. Subsurface, map interpretation, structural, petroleum geology, geomorphology, paleontology, etc.

BOX 307. Geologist, Ph. D., 34, married, 1 child. 5 yrs. broad field exp. (some supervisory) in U. S. and S. America. Good knowledge of Spanish. Desires overseas work in mining or petroleum. Available June 1.

BOX 308. GEOLOGIST, Ph. D., 40, married. Desires teaching position in economic geology-petrology. Four years teaching experience and eight years commercial geology. Principal background in metals and non-metals, petrology and engineering geology.

BOX 309. Geologist, 47, married, desires teaching position in Midwestern or Eastern United States. 9 yrs. teaching experience plus field and administrative work with State and U. S. Geological Survey.

BOX 310. Mature family man with widely diversified experience desires teaching position because that is what he does best. M.Sc. degree, 1½ yrs. teaching experience, 3 yrs. experience in minerals exploration and general geology. 1 yr. in photogeology, has talent for original thinking and research. Would consider position with research organization or established consulting firm.

BOX 311. Geologist, 25, M.S., single. Presently in U. S. Army. Available Oct. 1957. Desires research or exploration position. Fluent Spanish, passable French.

BOX 312. Geophysicist with degree in Geological Engineering from Colorado School of Mines desires position in Europe or Near East. Have 8 yrs. seismic experience with major oil company, 5 years in interpretive work.

ROCK CHIPS

by SANDSTONE SAM

A member of the Houston, Texas School Board publicly condemned a geography book recently because it contained political ideas with which she disagreed. In its place she suggested the use of an elementary Geology text in the high school geography course because "It contains nothing controversial whatsoever."

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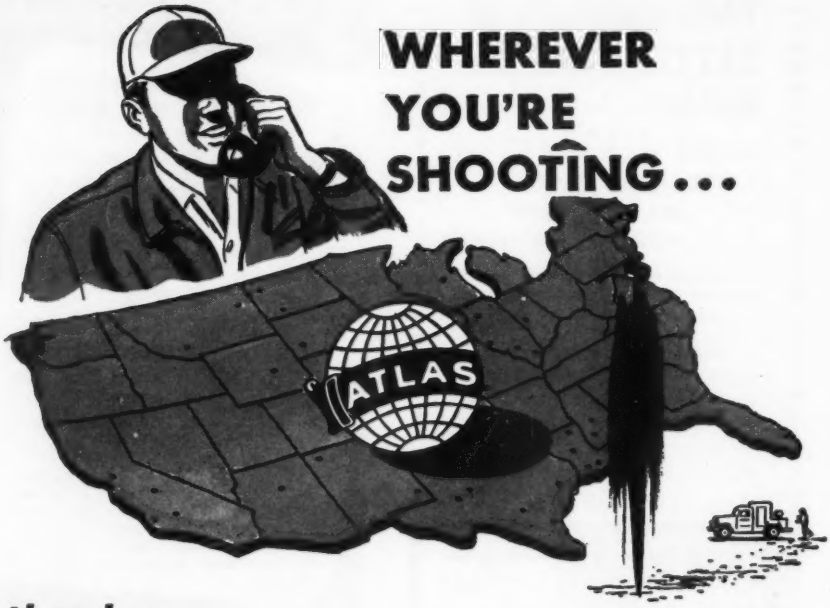

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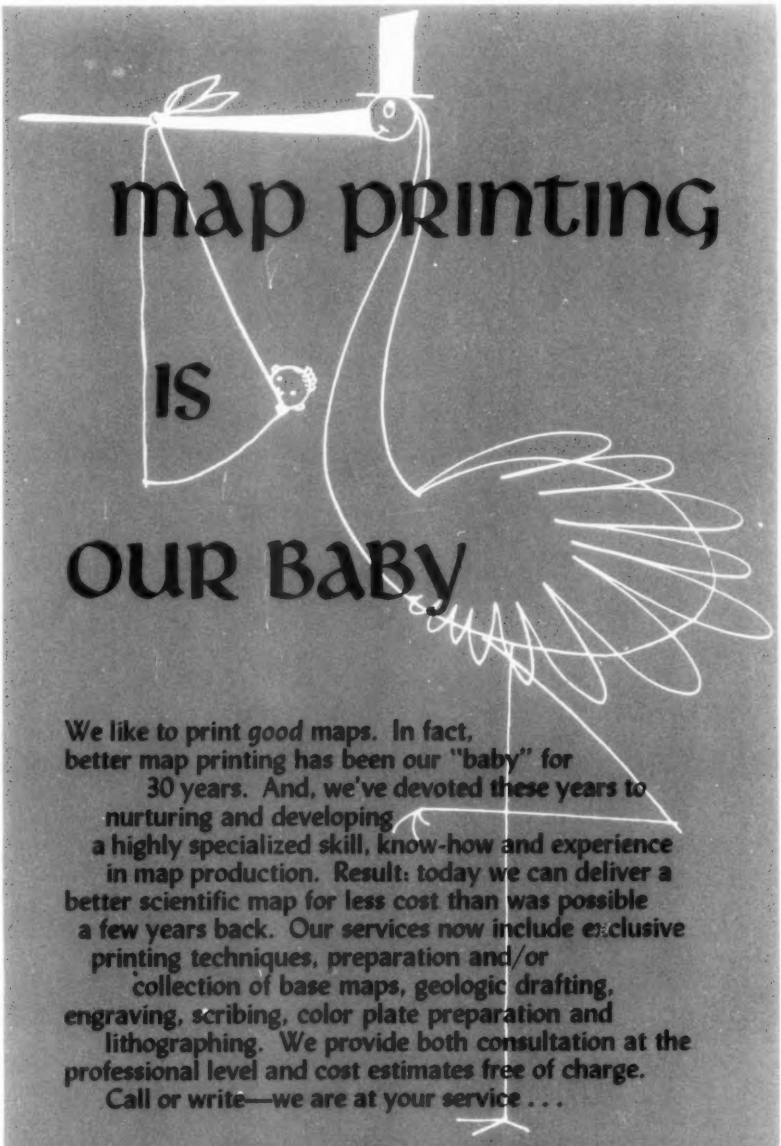

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